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Earnings Management Constraints in The UK and The US: The Moderating Role of CEO Compensation in Low vs. High Cash Holding Firms

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Abstract

This paper analyses the moderating role of CEO compensation on the associations between earnings management and three factors (audit quality, institutional ownership, and concentrated ownership) within low cash holding firms (LCASH) vs high cash holding firms (HCASH). This study is a comparative analysis conducted on UK and US-listed firms, throughout the period from 2005 till 2016, to analyse the moderation effect of CEO compensation, since CEOs play different roles and have different responsibilities on which they are compensated differently. This study reveals the effectiveness of the incentive power of CEO compensation, in line with the controlling power of other corporate governance mechanisms in restraining EM practices. Our analysis shows that in low cash holding firms, CEO compensation, audit quality, and the joint effect of CEO compensation with ownership concentration are proved to add value in restraining EM practices in the UK-listed firms, while none of the corporate governance mechanisms or the moderation effects proves to be effective in reducing managerial opportunism within high cash holding firms within the UK or US-listed firms holding different levels of cash.

Keywords: accrual-based earnings management, cash holding firms, financial reporting quality.

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قيود إدارة الأرباح في المملكة المتحدة والولايات المتحدة: الدور المعتدل لتعويضات الرئيس التنفيذي في الشركات القابضة ذات النقد المنخفض مقابل المرتفع

ملخص البحث

تحلل هذه الورقة الدور المعتدل لتعويضات الرئيس التنفيذي على الارتباطات بين إدارة الأرباح وثلاثة عوامل (جودة التدقيق، والملكية المؤسسية، والملكية المركزة) داخل الشركات القابضة منخفضة النقد (LCASH) مقابل الشركات القابضة ذات النقد العالي. (HCASH) هذه الدراسة عبارة عن تحليل مقارن تم إجراؤه على الشركات المدرجة في المملكة المتحدة والولايات المتحدة، طوال الفترة من 2005 إلى 2016، لتحليل التأثير المعتدل لتعويضات الرؤساء التنفيذيين، حيث يلعب الرؤساء التنفيذيون أدوارًا مختلفة ويتحملون مسؤوليات مختلفة حيث يتم تعويضهم بشكل مختلف .تكشف هذه الدراسة عن مدى فعالية القوة الحافزة لتعويضات الرئيس التنفيذي، بما يتماشى مع القوة الرقابية لآليات حوكمة الشركات الأخرى في تقييد ممارسات إدارة الأرباح .يظهر تحليلنا أنه في الشركات القابضة ذات السيولة المنخفضة، ثبت أن تعويضات الرئيس التنفيذي، وجودة التدقيق، والتأثير المشترك لتعويضات الرئيس التنفيذي مع تركيز الملكية تضيف قيمة في تقييد ممارسات إدارة الأرباح في الشركات المدرجة في المملكة المتحدة، في حين لم يتم تطبيق أي من آليات حوكمة الشركات أو تأثيرات الاعتدال في الحد من الانتهازية الإدارية داخل الشركات القابضة ذات السيولة النقدية العالية داخل المملكة المتحدة أو الشركات المدرجة في الولايات المتحدة والتي تمتلك مستويات مختلفة من النقد.

الكلمات المفتاحية: إدارة الأرباح على أساس الاستحقاق، الشركات القابضة للنقد، جودة التقارير المالية.

1. Introduction

Managers are tempted to engage in EM practices in order to inflate the stock prices of their firms, to signal better firm performance for the shareholders, and deserve higher compensation accordingly, in addition to avoiding the violation of debt contracts (Healy and Wahlen, 1999). They became concerned with protecting their reputations, as well as securing their positions, which become at risk if they didn't achieve earnings' benchmarks (Graham et al., 2005). Hence, they tend to use their discretionary powers, in the presence of cash flows, to maximize the firms' values (Bergstresser and Philippon, 2006). Earnings management practice is what creates the information asymmetry between managers and their shareholders, according to the agency theory. Hence, the presence of such agency problems leads to the investigation of various corporate governance mechanisms and compensation schemes, in an attempt of restraining EM practice. Hence, the overall aim of this research is to identify the drivers of EM reduction in high vs low cash holding firms, in order to enhance the transparency of the financial reporting process in the UK and the US contexts.

Even though CEO compensation is viewed as a reward for managers for leading the firms, it's criticised to increase earnings' manipulations when firms do not achieve their earnings' targets so that managers earn their compensation. These financial incentives may not necessarily ruin the firms' values, but rather they require adequate monitoring and control over them (Laux and Laux, 2009; Bergstresser and Philippon, 2006). Therefore, the presence of such incentives may motivate managers to work for the firms' best interests, if managers' opportunistic behaviours are well controlled, in addition to the fact that higher incentives attract higher monitoring and are considered a reward for managers for leading their firms (Jensen, 1993; Ozkan, 2011). Therefore, the question arising is whether they will become a reason behind higher or lower level of earnings management, when firms hold different levels of cash.

This is the first study to analyse the impact of the moderating role of CEO compensation on the associations between each of the audit quality, the institutional ownership, and the concentrated ownership, with EM, in high and low cash holdings. CEO compensation as a whole, including the short-term and the long-term components of compensation, is analysed, to reveal the overall impact of compensation as an incentive for managers for leading their firms. Conyon et al. (2001), Ozkan (2011), Cheng et al. (2016) and Chou and Chan (2018) supported the use of total compensation, in order to present a more complete picture when analysing the firm performance. The idea behind the moderation effect is suggested by prior studies such as Cornett et al. (2008), Burnett et al. (2012) and Kouaib and Jarboui (2014) since control mechanisms are interrelated, so the failure of one mechanism can be offset by the other.

Since higher cash holdings are observed to tempt managers to manipulate the firms' earnings in the US (Abdelwahed and Hussainey, 2022), leading to higher information asymmetry and more conflicts of interests, investigation of the effectiveness of governance mechanisms in low vs high cash-holding firms was worth analysing. This analysis is also supported by the agency theory and the entrenchment theory, as higher cash levels are expected to be more attractive for managers to use towards achieving their personal benefits. Hence, this study analyses the impact of the determinants of EM in low cash-holding (LCASH) firms compared to high cash-holding (HCASH) firms, to reveal the effectiveness of three corporate governance mechanisms, as well as the effectiveness of the moderation effect of CEO compensation in restraining EM practices in such firms. These mechanisms are expected to act differently and to be more effective in reducing EM, in the presence of lower cash levels, compared to higher cash levels, within firms.

The reason behind holding a comparative analysis between the UK and the US markets is that both countries share many similarities as the two are well developed countries, they have regulated stock markets, their firms have dispersed ownership of shares, and they both contribute towards much of the worldwide turnover. However, one of the main differences remain in how

they are regulated as US-listed firms comply with the GAAP, while the UK-listed firms comply with the IFRS, which have different implications on the financial reporting quality. Another difference remains in the roles of their CEOs as CEOs of US firms hold dual roles of the CEO and the chairman of the board (Higgs, 2003). Holding higher responsibility results in higher CEO compensation accordingly, which may impact EM practices differently (Aguilera et al., 2006 and Conyon and Murphy, 2000).

This research finds that the CEO compensation has a negative association with EM when cash levels are low in the UK, which reveals its incentive power in motivating managers to produce more transparent financial reports. In addition, the audit quality is revealed to restrain the participation of EM in LCASH firms within the UK. Yet, none of these associations appear to be effective in either UK HCASH firms, or US firms holding different levels of cash. Moreover, the joint effect of CEO compensation in the presence of ownership concentration is found to be a value-adding contribution, as it's found to restrain managerial opportunism, leading to lower levels of EM in UK LCASH firms, while it's revealed to be ineffective in UK HCASH firms, and in both types of firms within the US. This paper starts by discussing the literature review and hypotheses, followed by the research methodology, the research findings, and finally the conclusion of this study.

2. Literature Review and hypotheses development

2.1CEO compensation

The equity-based type of compensation is found to have both, a positive and a negative relationship with EM. Most prior studies support the idea that higher equity-based compensation is involved with higher earnings manipulations, as managers become tempted to manipulate the firms' earnings in order to earn even higher compensation. Yet, some researchers support the concept that higher compensation comes with greater monitoring and control exerted by the audit committees and other monitors as in Laux and Laux (2009), indicating that the relationship depends on which side is stronger.

Moreover, relying on the entrenchment theory, managers are always tempted to increase their powers and authorities, in order to strengthen their positions, which leads to higher agency problems between managers and shareholders due to the high information asymmetry between the two parties, as suggested by the agency theory. Hence, the presence of high CEO compensation is expected to widen this gap between managers and shareholders, if not enough control is exerted upon them. Therefore, a relationship is expected between the total CEO compensation and EM, in LCASH firm's vs HCASH firms of both counties of the UK and the US, which is worth analysing. Hence, the following hypothesis can be generated:

H1: There is a significant relationship between the total CEO compensation and EM.

2.2 Audit Quality

According to Zhou and Elder (2004), auditing plays an important role in verifying the accuracy of the firm's reported earnings. Hence, the audit quality is perceived to be an effective corporate governance mechanism due to its capability of reducing the information asymmetry between managers and shareholders and ability to confirm the reliability of the financial reporting process (Palmrose, 1988 and Davidson & Neu, 1993). In this study, audit fees are used as a proxy for audit quality, as it indicates auditor's independence and signals the expected audit effort.

The impact of audit service fees are analysed for three reasons. First, it is considered an indication of higher audit quality, as it's earned by Big audit firms, as mentioned by Hay et al. (2008), and industry specialist auditors, as indicated by Chen et al. (2005), in return for their expertise and professional audit services and efforts, as indicated by Mitra et al. (2007). Second, the UK is found to be mostly audited by 'Big' audit firms, as found by Hassanein et al. (2018), which reduces the need for its analysis. Third, audit fees may be tricky as they may be actually spent for monitoring and controlling purposes, or may be used just to signal higher credibility of the financial reporting processes of firms in order to attract investors, as suggested by Rajgopal et al. (2015).

Therefore, the audit quality represented by the amount of audit service fees is worth studying, to indicate its real impact on EM practices, in LCASH vs HCASH firms of both the UK and US contexts.

As previously discussed, the audit quality is found to have a negative relationship with EM, since higher spending of audit fees implies higher audit efforts exerted by highly experienced external auditors to restrain managerial opportunism, leading to lower levels of earnings manipulations. However, the existence of audit quality by itself may not exert sufficient monitoring on firms as previously suggested by Burnett et al. (2012) and Roychowdhury (2006). In addition, high spending of audit fees may perform as a signal to the market and shareholders that firms are operating in a good manner, as suggested by the signalling and agency theories. Therefore, a relationship is expected and is worth analysing. Hence, the following hypothesis can be generated:

H2: There is a significant relationship between the audit quality and EM.

2.3 Institutional Ownership

High institutional ownership may act as a controlling mechanism to restrict managers' opportunistic behaviours and reduce EM practices, since institutions have significant resources and great access to relevant information which enables them to restrict managerial opportunism (Michel et al., 2014, and Alzoubi, 2016). Yet, high institutional ownership may increase EM practices, due to the high pressures from institutions on managers to meet the short-term targets, which pushes managers towards manipulating the firm's earnings in order to meet these targets (Bushee, 2001, and Charitou et al., 2007). The presence of two opposing views makes the variable worth analysing. In case the higher institutional ownership leads to higher earnings manipulations, then, agency problems will be created due to the rise of conflicts of interests. Therefore, a relationship is expected and the following hypothesis is generated:

H3: There is a significant relationship between institutional ownership and EM.

2.4 Concentrated Ownership

High concentrated ownership may act as a corporate governance mechanism to reduce EM, as block-holders become keen to protect their large investments (De Miguel et al., 2004). Yet, if the concentrated ownership becomes excessively high, block-holders tend to act in their favour towards achieving their own interests instead, which creates agency problems with minority shareholders. Their excessive powers may push managers towards manipulating the firms' earnings, in order to lead block-holders to their private benefits, neglecting minority shareholders' interests (Zhong et al., 2007, and Boubakri et al., 2005). The existence of two opposing views makes the variable worth studying and hence, a significant relationship is expected. Therefore, the following hypothesis is generated:

H4: There is a significant relationship between the concentrated ownership and EM.

Relying on Cremers and Nair (2005) and Ozkan (2011) interrelationships between various corporate governance mechanisms can act as complements or substitutes for each other. In addition, Berry *et al.* (2006) found that governance attributes act as complements. Based on these prior studies, the interaction effect between CEO compensation and either one of the governance mechanisms such as the audit quality, the institutional ownership, or the concentrated ownership is expected to have a complementary effect. Therefore, the moderating role of CEO compensation is expected to reduce EM practices, and is worth analysing in LCASH vs HCASH firms. The strength of the joint effects proposed in H5, H6, and H7 are expected to indicate even higher effectiveness of the proposed joint relations. Hence, the following hypotheses can be generated:

H5: The joint effect of CEO compensation and audit quality on EM is complementary.

H6: The joint effect of CEO compensation and institutional ownership on EM is complementary.

H7: The joint effect of CEO compensation and concentrated ownership on EM is complementary.

The above mentioned hypotheses are analysed for both contexts of the UK and the US, to compare the findings of LCASH and HCASH firms within the two contexts. Hence, the UK LCASH firms are compared to US LCASH firms, then UK HCASH are compared to US HCASH firms, to indicate whether EM constraints are more effective under the US GAAP or the IFRS. According to Beest et al. (2009), the US GAAP tends to present more faithful financial reports compared to those produced in compliance with the IFRS. Hence, the following hypothesis is generated:

H8: EM constraints are more effective in the US, compared to the UK, in reducing EM practices.

3. Research Methodology

3.1 Sample

A comparative analysis is conducted between the UK and the US. The analysis is conducted on UK firms listed on the FTSE 350 index, as it involves the economically most important firms (Abdullah and Page, 2009), compared to US listed firms, listed on the S&P 500 index, as it is the most commonly used index in the US and the benchmark for the US stock market (Carr, 2013). Firms are split into HCASH firms and LCASH firms, using the median, as in previous studies such as Hussainey and Walker (2009) and Alali (2011).

The analysis is conducted on the period starting from 2005, since firms were regulated by the International Financial Reporting Standards (IFRS) (Jermakowicz and Gornik-Tomaszewski, 2006; and Beest et al., 2009), until 2016- a duration of 12 years. The financial sectors- such as banks, insurance firms, investment funds, and real estate firms, are excluded from the analysis since their financial statements have unique characteristics (Sun et al., 2010). This research also matches for the year and industry, as in Bergstresser and Philippon (2006), Sun et al. (2010), Chen et al. (2011), Liu et al. (2014), Okoh (2015), and Cheng et al. (2016).

3.2 Model

In this research, a moderated multiple regression equation is applied, to analyse the moderating role of CEO compensation (Abdelwahed and Hussainey, 2022). This model is applied within LCASH and HCASH firms, within the two contexts of the UK and the US. The research model is presented as:

$$EM = \alpha + \beta 1\ COMP + \beta 2\ AUDQ + \beta 3\ (AUDQ \times COMP) + \beta 4\ INSTOWN + \beta 5\ (INSTOWN \times COMP) + \beta 6\ CONOWN + \beta 7\ (CONOWN \times COMP) + \beta 8\ LEV + \beta 9\ SIZE + \beta 10\ ROA + \beta 11\ MTB + \beta 12\ CFO + \beta 13\ LOSS + \varepsilon$$

Where:

EM	is earnings management.
COMP	represents CEO compensation.
AUDQ	is the audit quality.
INSTOWN	is the institutional ownership.
CONOWN	is the concentrated ownership.
LEV	*is the firm's leverage.*
SIZE	*is the firm's size.*
ROA	*represents the firm's profitability.*
MTB	*represents the firm's growth.*
CFO	*represents the firm's cash flow from operations*
LOSS	*represents the firm's loss.*
Bi	*represents the regression coefficient, where i= 0, 1, 2 … 15*
ε	represents the error term.

In addition, to further reveal the marginal impact of the EM constraints in influencing EM practices of UK-listed firms in comparison with US-listed firms, a dummy variable is created to indicate the country type "C", as in Wright et al. (2006). Hence, the country type variable takes a value of "1" for US firms, and "0" for UK firms, as previously explained by Abdelwahed and Hussainey (2022), as follows:

$$EM = \beta 0 + \beta 1\ COMP + \beta 2\ AUDQ + \beta 3\ INSTOWN + \beta 4\ CONOWN + \beta 5\ (COMP \times AUDQ) + \beta 6\ (COMP \times INSTOWN) + \beta 7\ (COMP \times CONOWN) + \beta 8\ C + \beta 9\ (C \times COMP) + \beta 10\ (C \times AUDQ) + \beta 11\ (C \times INSTOWN) + \beta 12\ (C \times CONOWN) + \beta 13\ (C \times COMP \times AUDQ) + \beta 14\ (C \times COMP \times INSTOWN) + \beta 15\ (C \times COMP \times CONOWN) + \beta 16\ LEV + \beta 17\ SIZE + \beta 18\ ROA + \beta 19\ MTB + \beta 20\ CFO + \beta 21\ LOSS + \varepsilon$$

Where:

$\beta 0+\beta 1+\ldots+\beta 8+\beta 7$	represent the impact of EM constraints in UK firms.
$\beta 0+\beta 1+\beta 2+\ldots+\beta 18+\beta 15$	represent the impact of EM constraints in US firms.
$B8+\beta 11+\ldots+\beta 18+\beta 15$	represent the marginal impact of the EM constraints on EM between UK and US firms (Gujarati, 2011).

3.3 Measurements of Variables[1]

3.3.1 Earnings Management

This study uses discretionary accruals to indicate earnings management as managers' accrual choices are associated with affecting the reliability of the firms' reported earnings (Subramanyam, 1996). The Modified Jones model is the most widely used model for measuring the discretionary accruals component. This research uses the cash flow method to measure the total accruals, using the following equation (Sun et al., 2010; Anagnostopoulou and Tsekrekos, 2017; Abdelwahed and Hussainey, 2022).

$$TAC_{it} = NI_{it} - CFO_{it} \quad (1)$$

$$NDAC_{it} = \alpha_i [1/ TA_{it-1}] + \beta_{1i} [(\Delta REV_{it} - \Delta REC_{it})/ TA_{it-1}] + \beta_{2i} [PPE_{it} / TA_{it-1}] \quad (2)$$

$$DAC_{it} = TAC_{it} - NDA_{it} \quad (3)$$

[1] The measurement of the above-mentioned variables are indicated in table 1.

4. Findings

4.1 Descriptive Statistics of UK LCASH Firms

For firms holding low cash levels, they are observed to have an average cash holding of approx. 3.4%, as indicated in table 2, with a min of 0.1% and a max of approx. 6%. Low cash holding firms are observed to have an average absolute value of DAC of 2%, with a min of 0 and a max of 10.8%. This average DAC is slightly lower than that of the whole sample of 3.1%, even the max boundary of DAC of low cash holding firms is much lower than that of the whole sample of 42%. This indicates that the level of DAC is reduced when firms hold low cash levels, which reveals that low cash-holdings can be used as a strategy for restraining EM practices among UK-listed firms.

In regards to the CEO compensation, low cash holding firms are observed to spend an average of 2.9 M towards the compensation of their CEOs, with a min of approx. 3 thousand and a max reaching 12.3 M, presented in table 2. The average CEO compensation spent by firms holding low cash levels is lower than that of the whole sample of 3.3 M, even the max boundary is lower than that of the whole sample of 32.1 M. This indicates that low cash holding firms distribute lower CEO compensation, compared with the whole sample.

Low cash holding firms are found to spend an average of 2.7 M of audit service fees towards acquiring audit services, with a min of 0 and a max of 34 M, as presented in table 2. This average is much lower than that of the whole sample of 4.2 M, with even lower boundary of the max spending observed by the whole sample of 57 M. This can indicate that low cash holding firms acquire fewer audit efforts due to the lower risk associated with the lower cash they hold on hand, as suggested by Krishnan and Visvanathan (2009).

The average institutional ownership present in low cash holding firms as presented in table 2 is approx. 9%, with a min of 0 and max shareholdings of 39% held by institutional investors. The average institutional ownership is equivalent to that of the whole sample of 9%, even though a higher boundary of 54% is observed in the findings of the whole sample. The concentrated

ownership is observed to have an average of approx. 7%, with a min of 0 and a max of 61% held by non-institutional block-holders. This average of concentrated shareholdings is comparable with that of the whole sample of 8.5%, even though a higher boundary is observed in the whole sample of 74%.

4.2 Descriptive Statistics of UK HCASH Firms

For UK firms holding high cash levels, they are observed to have an average cash holding of approx. 14%, as indicated in table 3, with a min of 6% and a max of approx. 41%. High cash holding firms are observed to have an average absolute value of DAC of 3.8%, with a min of 0 and a max of 32.6%. This average DAC is almost double the DA of LCASH firms of 2%, presented in table 2, even the max boundary of DAC appears to be almost three times as much that of LCASH of approx.11%, indicated in table 2. This indicates that the level of DAC is higher in the presence of higher cash levels, which reveals that low cash-holdings can be used as a strategy for restraining EM practices among UK-listed firms.

In relation to the CEO compensation, HCASH firms are observed to spend an average of 3.2 M, with a min of approx. 600 thousand and a max of 17M towards compensating their CEOs, as indicated in table 3. This average is slightly higher than that spent by LCASH firms of only 2.9M, indicated in table 2, with even higher max spending of compensation than that of LCASH firms of 12.3M. This indicates that UK firms holding higher cash levels tend to prefer the distribution of higher levels of compensation in an attempt to satisfying their CEOs.

HCASH firms are observed to spend an average of 2.8M towards the acquisition of audit efforts, with a min of approx. 48 thousand, and a max of approx. 37M, as indicated in table 3. The average spending of audit fees of HCASH firms is comparable to that of LCASH forms of 2.7M, with slightly higher max boundary, as indicated in table 2. This indicates that HCASH firms are not much concerned about acquiring higher audit efforts to protect

their cash levels. This, however, may be due to their reliance on other governance mechanisms acquired by their firms, as will be further revealed.

HCASH firms are observed to have an average of institutional shareholdings of 1%, with a min of 0, and a max of 46%, as indicated in table 3. This average is lower than that held by institutional investors in LCASH firms, as presented in table 2, even though a higher boundary is observed in HCASH firms than in LCASH firms. HCASH UK firms are observed to have an average ownership concentration of 7.2%, with a min of 0 and a max of 69%, as presented in table 3. This average is comparable to that of LCASH firms of 7%, presented in table 2, even though a higher boundary is observed for HCASH firms.

5. Descriptive Statistics of US LCASH Firms

In the US, firms holding low cash levels are observed to have an average cash holding of 3%, as indicated in table 4, with a min of 0 and a max of 7%. This finding of low cash holding firms is comparable with UK LCASH firms. In relation to the absolute value of DAC, low cash holding firms are observed to have an average of 2.8%, with a max of 33%, as indicated in table 4. This average is lower than that of the whole US sample of 3.5%, but comparable with the average DAC of 2.6% participated by UK firms holding low levels of cash.

Low cash holding firms are observed to distribute an average CEO compensation of 13.6M, with a min of approx. 34 thousand, and a max of 156 M. This average is comparable to that of the whole sample, which indicates that US firms generally tend to prefer high spending of CEO compensation, to compensate for the higher responsibilities given to their CEOs. This average CEO compensation of US firms holding low cash levels is observed to be much higher than the average CEO compensation of 2.9 M provided by low cash holding firms in the UK. This, however, can be justified by the greater responsibilities held by CEOs of US firms, in comparison with those of the UK- who separate the roles of CEOs and chairmen of the boards.

In relation to the audit quality presented by the audit fees spent, low cash holding firms are observed to spend an average of 12.7 M, with a min of approx. 328 thousand, and a max of 3.4 B, towards audit services, as indicated in table 4. This average is comparable to the average presented by the whole sample of 12.9M. This indicates that US firms holding low levels of cash are keen to acquire high audit efforts. This average is also higher than the average audit service fees of 2.7M spent by low cash holding firms in the UK, as indicated in table 2. This higher spending on audit services, however, may be associated with the need for higher monitoring in the US due to the presence of higher responsibilities in the hands of the CEOs along with the higher compensation awarded to them.

In regards to the institutional ownership, low cash holding firms in the US are observed to have an average of 9.3%, with a min of 0 and a max reaching 65%, as indicated in table 4. This average is comparable with that of approx. 9% of low cash holding firms within the UK, indicated in table 2. However, the concentrated ownership is found to have an average of 2.4%, with a min of 0, and a max reaching 55%, presented in table 4. This indicates a higher reliance of low cash holding firms on institutional investors rather than non-institutional block-holders in the US. This average is much lower than that of approx. 7% of UK listed firms holding low cash levels, as indicated in table 2.

6. Descriptive Statistics of US HCASH Firms

Table 5 indicates an average cash-holding of 15.7%, with a min of 7% and a max reaching 70.8%. These findings are much higher compared to the low cash-holding sample of US-listed firms, which are observed to have an average cash-holdings of only 3% and a max reaching 7%. In relation to the absolute value of DAC, high cash holding firms are observed to have an average of 3.9%, with a max reaching 44.6%, as indicated in table 5. These findings are higher than the average and max boundary of absolute DAC of US low cash-holding firms of 2.8% and 33%, respectively, presented in table 4, which indicates that high cash-holding (HCASH) firms tend to experience

higher levels of EM compered to low cash-holding (LCASH) firms within the US context.

HCASH firms are observed to distribute to an average CEO compensation of 14.1 M which, with a min of 245 thousand, and a max of 378 M, as indicated in table 5. These findings are also higher than the level of CEO compensation distributed by LCASH firms, which tend to have an average of 13.6M, and a max of 156M, as indicated in table 4. This indicates that HCASH firms tend to prefer higher distributions of CEO compensation, compared to LCASH firms, which can be considered a strategy for incentivising their managers and protecting the firms' resources from managers' abuse towards their personal desires, leading to more transparent financial reports.

In relation to the audit quality, HCASH firms are observed to spend an average audit service fees of 13.2 M, with a min of 491 thousand and a max of 3.5 B, as indicated in table 5. These findings are also slightly higher than the audit fees spending of LCASH firms observed in table 4, which indicates their higher need for audit efforts to protect the higher level of cash they hold. In regards to the institutional ownership, HCASH firms are observed to have an average of 11%, with a min of 0, and a max of 78%, as indicated in table 5. These findings are also higher than the findings of LCASH firms observed in table 4, which could be due to their greater need for the monitoring and control measures imposed by the institutional investors.

Similarly, the intervention of non-institutional block-holders is observed to be higher in HCASH firms, compared to LCASH firms, which may also be used to monitor and constrain managerial opportunism. HCASH firms tend to have an average of 3.2%, with a min of 0, and a max boundary of ownership concentration reaching 81%, as presented in table 5.

7. Moderated Regression Results of UK LCASH Firms

This analysis conducted on low cash holding firms, listed on the FTSE 350 index, reveals some differences in the impact of the corporate governance mechanisms on EM practices. First, the CEO compensation is found to have a

significant association with EM, as indicated in table 6, which accepts the first hypothesis suggesting a relationship between the two, in the presence of low cash levels within firms. A negative relationship is observed by the negative coefficient of -0.179. This indicates that when firms hold low cash levels, managers no longer take advantage of their compensation towards increasing EM practices, but rather it acts as an incentive for them to reduce earnings' manipulations. To further clarify, they are no longer interested in manipulating the firms' earnings to increase their equity-based portion of compensation. This finding is inconsistent with the entrenchment theory since managers are less entrenched to participate their opportunistic behaviours, in the presence of low cash holding levels within their firms. It is also inconsistent with the agency theory, since lower cash holdings leave lower opportunity for managerial opportunism, leading to lower participation of EM and lower agency problems. This finding is consistent with the stewardship theory, however, as lower DA levels are associated with high CEO compensation, which indicates that managers' interests are aligned with those of their shareholders'. This finding is consistent with the findings of Hassen (2014) who found a negative relationship between the total compensation and EM, from a sample of eighty French firms listed on the SBF 120, from 2007-2010. This negative relation indicates that CEO compensation can act as a motive for managers to act in the firm's best interest rather than their own, in the French context, which makes them less opportunistic and reduces EM practices, not to mention, managers' desire to maintain their leadership powers.

Second, the audit quality is found to have a significant association with EM practices, as indicated in table 6, which accepts the second hypothesis of a significant relation between the two. A negative relationship is indicated by the negative coefficient of -0.21. This indicates that the audit quality is an effective EM controlling mechanism in regards to UK firms holding low levels of cash. This can be an indication that the audit fees' spending is sufficient to impose their monitoring and control on EM of such firms, as they already acquire a low cash holding strategy. This finding is consistent

with the findings of Zhou and Elder (2004), Cohen and Zarowin (2010), and Chi et al. (2011) who found a significant negative relation between audit quality and EM. Their explanation behind this is that the existence of higher audit quality helps in reducing the information asymmetry and the agency problem arising between managers and shareholders, reducing managers' discretions over the firms' resources and therefore, enhancing the transparency of the financial reporting process. Chen et al. (2011) also found a negative relationship between the audit quality and EM for non-state owned enterprises (NSOEs), for Chinese firms from 2001-2006.

Third, institutional ownership is found to remain insignificant in relation to EM. This finding rejects the third hypothesis. This indicates that even if firms hold low cash levels, the existence of institutional investors does not seem to exert enough control to restrain EM practices, in UK listed firms. This finding is consistent with the finding of González and García-Meca (2014) who found an insignificant relationship between the institutional ownership type of corporate structure and the level of earnings management on their study of the main Latin American stock markets from 2006-2009. This may be due to the existence of higher ownership concentration, which they found to have a great impact in reducing EM, which indicates that the main shareholders are more powerful than institutions in affecting EM levels. This is consistent with our findings as the concentrated ownership is also significant, as indicated in table 2, and tends to reach up to a max of 61%, which is 22% higher than the max held by institutions, as indicated in table 2. In relation to previous UK studies, Peasnell et al. (2005) also found a consistent finding of an insignificant relation between the institutional ownership and EM, on their study of UK listed firms between 1993 and 1996. Additionally, consistent with these findings is the finding of Al-Fayoumi et al. (2010) who also found an insignificant relationship between the institutional ownership and the level of EM practices, on their analysis of Jordanian industrial firms, between 2001- 2005. They justified that this insignificant relation may be due to their lack of expertise or their strategic alliance with the management.

Fourth, the concentrated ownership is found to have a significant positive relationship with EM, as indicated in table 6. This finding accepts the fourth hypothesis of a significant relationship. This indicates that large non-institutional investors remain powerful, even in the presence of low cash holding levels within firms, as they push managers towards manipulating the firms' earnings, to lead them to their private benefits. This finding is consistent with the findings of Zhong et al. (2007) and Halioui and Jerbi (2012) who found that the existence of high levels of block-holders makes them more focused on achieving their own interests rather than the minority shareholders' interests, resulting in agency problems. This pushes managers towards managing the firms' earnings in an attempt of leading block-holders to their private benefits, leading to more conflicts of interests as suggested by the agency theory.

In relation to the moderation effects generated in this research, the CEO compensation is found to moderate the relation between the audit quality and EM in firms holding low cash levels, as indicated in table 6. The joint effect of the CEO compensation with the audit quality is observed to have a positive association with EM, in low cash holding firms in the UK. This can indicate that the two factors joined together are not such an effective mechanism in restraining EM practices in UK firms holding low levels of cash. This is hard to justify though since each of the two factors independently is found restrain EM, but when combined together their effect reverses.

This positive relationship can be due to the nature of one component embedded within the CEO compensation, such as the equity-based type of compensation, which tends to lead to higher earnings management in order to display higher firm value for firms holding low cash levels so that they can deserve even higher compensation. To further clarify, firms holding low levels of cash are less capable of investing to present higher firm value and to increase managers' compensation accordingly, which pushes managers towards manipulating the firms' earnings in order to reach their desires of higher equity-based compensation. In addition, the audit quality- represented by the audit fees may not be sufficient to control managerial opportunism

resulting from the equity-based type of compensation which may be stronger in its impact. Therefore, their joint effect encourages the participation of EM. This finding rejects the fifth hypothesis as the joint effect was expected to restrain earnings' manipulations rather than encouraging it.

On the contrary, the CEO compensation is found not to moderate the relation between the institutional ownership and EM, in the presence of low cash holding levels within UK firms. This indicates that when firms keep lower levels of cash, the CEO compensation does not act as an incentive for managers to work for the firm's best interest, to reduce their opportunistic behaviours and earnings' manipulations consequently in the presence of institutional investors. This could be due to the institutions' high impact on managers which offset the benefit of compensation. This finding rejects the sixth hypothesis suggesting a moderation effect since analysing the strength becomes no longer valid.

The joint impact of the CEO compensation with the ownership concentration is found to have a significant impact on the participation of EM, as indicated in table 6. A negative association is observed due to the negative coefficient of -0.090. This indicates that even though the presence of non-institutional block-holders is found to increase EM, as they push managers towards manipulating the firms' earnings for their private gains when managers are well awarded, they become more satisfied and incentivised not to engage in such EM practices. This reveals the incentive power of compensation in restraining managerial opportunism, as well as block-holders', in low cash holding firms within the UK. The strength of this joint effect, however, is found to be substitutive since the coefficient of the joint effect is lower than the sum of the two variables' coefficients, which rejects the seventh hypothesis suggesting a complementary effect.

In conclusion, when the same corporate governance mechanisms are incorporated in low cash holding UK firms, they are revealed to be more effective, than when analysing the whole sample. Hence, they better contribute to limiting managerial opportunism and EM practices accordingly,

in the presence of low cash holdings. This may be due to the presence of lower opportunities for managerial opportunism, involved with the presence of low cash levels within UK firms, which makes it easier to control using the same corporate governance mechanisms.

Hence, if UK firms hold lower cash in their firms and need to restrict managers from manipulating the firms' earnings, they are advised to increase the distribution of CEO compensation, the spending of audit fees to acquire higher audit efforts, and the distribution of higher CEO compensation in the presence of high ownership concentration. They are also advised to intervene in growth opportunities and to avoid the presence of high ownership concentration. As for the UK investors, they are advised to invest in such firms following these instructions, and in large firms, as they become highly monitored, when low cash holding levels are present, to encourage the issuance of more reliable financial reports.

8. Moderated Regression Results of UK HCASH Firms

This analysis conducted on high cash holding firms, listed on the FTSE 350 index, reveals some differences in how the corporate governance mechanisms impact EM practices in the presence of higher levels of cash. First, the CEO compensation is revealed to have an insignificant association with EM, as indicated in table 6, even though a negative coefficient is observed. This finding rejects the first hypothesis suggesting a relationship between the two. This finding is inconsistent with the findings of LCASH firms of the UK, presented in table 6. This indicates that CEO compensation acts as an incentive for managers to restrain their EM practices, only in the presence of lower cash levels within UK-listed firms, even though HCASH firms are observed to distribute even higher CEO compensation compared to LCASH firms.

Second, in relation to the audit quality, it is revealed to have an insignificant relationship with EM practices conducted in HCASH firms, as indicated in table 6, even though a negative coefficient is observed. This finding rejects the second hypothesis suggesting a relationship between the

two. This insignificant relationship can be due to the need for higher spending of audit fees to acquire higher audit efforts to better restrain managerial opportunism, in the presence of higher cash levels. This can be due to the low average of audit fees of 2.8M, compared to the max amount spent of approx. 37M within the same sample, as indicated in table 3. This can also be due to the UK firms' dual leadership pattern of which they separate the roles of the CEO and the chairman of the board, which is perceived to have higher internal control, leading to lower need for external auditing, as suggested by Krishnan and Visvanathan (2009). This finding is inconsistent with the findings of LCASH firms, presented in table 6, as the audit fees' spending is found to restrain managerial opportunism when lower cash levels exist within the UK-listed firms.

This finding is consistent with the finding of Kouaib and Jarboui (2014) who found an insignificant relationship between the audit quality represented by the "Big 4" and EM, in Tunisian commercial firms, between 2007 and 2011. Their explanation behind this is that auditors who belong to one of the "Big 4" auditing firms cannot necessarily force stop managerial opportunism; along the fact that small percentage of these firms are audited by at least one of the "Big 4".

This finding is also consistent with the findings of Chen et al. (2011), in their study of Chinese firms, between 2001 and 2006. They explained that this insignificant relation may be due to the large percentage of their sample firms that are state-owned (SOEs), which tend to have weaker incentives to manage accounting performance due to the different ownership structures and agency relations. Hassen (2014) also found an insignificant relationship between the audit quality and EM, in the existence of a significant impact of CEO compensation as well, in their sample of French firms between 2007 and 2010, but didn't provide a justification of why this might be the reason.

Third, the presence of institutional investors is observed to have no association with EM practices conducted in HCASH firms, as indicated in table 6. This finding rejects the third hypothesis suggesting a relationship

between the two. This finding is consistent with the findings of LCASH firms, presented in table 6, which indicates that the presence of institutional investors does not act as an effective control mechanism in restraining the EM practices in the UK market, whether holding high or low cash levels. This finding is consistent with the findings of González and García-Meca (2014), Peasnell et al. (2005), and Al-Fayoumi et al. (2010) who also found an insignificant relationship between the institutional ownership and the level of EM practices, as previously discussed.

Fourth, ownership concentration is observed to have no association with EM practices of HCASH firms, as indicated in table 6. This finding rejects the fourth hypothesis suggesting a relationship between the two. This finding is inconsistent with the findings of LCASH firms, presented in table 6, as a positive relationship is observed in the presence of lower cash levels, even though the two types of firms are observed to have comparable averages of concentrated shareholdings. This finding is consistent with the findings of Peasnell et al. (2005) who found an insignificant relation between ownership concentration and EM in the UK context; and Al-Fayoumi et al. (2010) who found an insignificant relation, on their analysis of Jordanian industrial firms.

In regards to the moderating effects of CEO compensation, they are all observed to be insignificant in relation to EM, which indicates the absence of moderation, presented in table 6. This reveals that the presence of CEO compensation as a moderator is not such an effective strategy in restraining EM practices of HCASH firms in the UK when moderating the associations between either one of the audit quality, the institutional ownership or the concentrated ownership, and EM. These findings reject the fifth, sixth, and seventh hypotheses suggesting moderation, since analysing the strengths for these joint effects are no longer valid. These findings are partially consistent with the UK findings, presented in table 6, as the presence of CEO compensation is observed not to moderate the association between the institutional ownership and EM.

In conclusion, in the presence of lower cash levels within UK firms, higher CEO compensation, as well higher spending of audit fees, and lower presence of concentrated shareholdings tend to be effective mechanisms in restraining EM practices, while none of these mechanisms adds value in the presence of higher cash levels. Moreover, the moderation effect tends to be valid in LCASH firms, compared to HCASH firms, since the distribution of CEO compensation in the presence of concentrated shareholdings tend to contribute to restraining EM practices of LCASH firms. Hence, in the presence of high cash holdings of UK firms, it is difficult to determine what's best to restrain EM practices of their managers, other than generating profits, to provide a guide for investors of where to best invest their funds to be presented with more transparent financial reports.

9. Moderated Regression Results of US LCASH Firms

This analysis of low cash holding firms, listed on the S&P 500 index, reveals some differences in the impact of the corporate governance mechanisms on EM practices. First, in regards to the CEO compensation, it is revealed to have an insignificant relation with EM, as indicated in table 7, even though a negative relation is observed. This finding rejects the first hypothesis of a significant relationship between CEO compensation and EM practices. This finding is inconsistent with the UK findings presented in table 6, which indicates that CEO compensation performs as an incentive for managers to restrict their EM practices in case of low cash levels within UK firms only, even though US firms distribute higher CEO compensation compared to that of the UK, as previously discussed. This insignificant relation is inconsistent with the entrenchment and agency theories, which suggest higher managerial opportunism involved with higher CEO compensation, resulting in higher asymmetric information between managers and shareholders.

Second, in relation to the audit quality, it is revealed to have an insignificant association with EM practices of low cash holding firms of the US, as indicated in table 7, even though a negative coefficient is observed,

which rejects the second hypothesis suggesting an association between the two. This insignificant relation can be due to the need for higher spending on audit fees in order to acquire higher audit efforts to become effective in restraining the participation of EM in low cash holding firms. This finding is inconsistent with the UK findings indicated in table 6, as the audit quality in UK firms is found to restrain EM practices, even though the US firms are observed to spend higher audit fees, compared to UK firms, as previously discussed. This finding is consistent with the findings of Kouaib and Jarboui (2014), Chen et al. (2011), and Hassen (2014) who also found insignificant relations with EM, as mentioned previously.

Third, institutional ownership is found to be insignificant in relation to EM, as indicated in table 7, even though a negative association is observed. This finding rejects the third hypothesis suggesting an association between the two. This may be due to the institutions' lack of expertise or their strategic alliance with the management, as suggested by Al-Fayoumi et al. (2010). This insignificant relation indicates that institutional ownership is not considered an effective corporate governance mechanism in reducing EM practices in US LCASH firms. In addition, this finding is consistent with the UK findings, indicated in table 6, which concludes that the institutional ownership, in such developed countries, is not such a powerful mechanism in reducing earnings' manipulations. This finding is consistent with the findings of González and García-Meca (2014), Peasnell et al. (2005), and Al-Fayoumi et al. (2010) who also found an insignificant relationship between the institutional ownership and the level of EM practices, as mentioned previously.

Fourth, the concentrated ownership is also found to be insignificant, as indicated in table 7. This finding rejects the fourth hypothesis suggesting an association as well. This can indicate that when cash holdings are at low levels in US firms, the concentrated ownership does not act as a monitoring and controlling mechanism, which can be due to the lower need for monitoring, since the presence of low cash levels in firms is perceived to be less attractive for managers to act towards their personal benefits. This finding is inconsistent with the UK findings presented in table 6, which is observed to increase EM

levels. This can be a result of the lower average ownership concentration in LCASH US firms, compared with UK firms holding low cash levels, as previously explained. This finding is consistent with the findings of Peasnell et al. (2005) and Al-Fayoumi et al. (2010) who also found an insignificant relation between the two.

In regards to the moderating effects suggested in this research model, they all tend to indicate the absence of moderation, as presented in table 7. Hence, the existence of CEO compensation is found not to moderate any of the relations between either the audit quality, the institutional ownership or the concentrated ownership, with EM participated in US firms with low cash holdings. This indicates that CEO compensation does not act as an incentive for managers to limit their opportunistic behaviours and EM levels when low cash holdings are present in US firms. These findings reject the fifth, sixth, and seventh hypotheses suggesting the moderation, since assessing their strengths are no longer valid. These findings are partially consistent with the UK findings, presented in table 6 since the presence of CEO compensation is observed not to have a moderating effect on the association between the institutional ownership and EM.

In conclusion, when US firms hold low cash levels, none of the above-mentioned mechanisms seems to be effective in reducing earnings' manipulations, which could be due to their reliance on the strategy of holding low levels of cash in restraining managerial opportunism. The moderating role of CEO compensation is also found to be an ineffective strategy in motivating managers to present more transparent financial reports. Hence, US firms holding low cash levels, are advised to better monitor their CFO to use it for further investments, to generate higher profits, if they intend to reduce the EM levels in their firms. Additionally, US investors are highly advised to invest in such firms holding low CFO or generating higher profits, in case of holding low levels of cash, to have a clear picture of the firm's performance.

10. Moderated Regression Results of US HCASH Firms

This analysis reveals how corporate governance mechanisms act in relation to EM practices, in high cash holding firms, listed on the S&P 500 index. First, CEO compensation is found to have no association with EM, as indicated in table 7, which rejects the first hypothesis suggesting a relationship between the two. This finding is consistent with the findings of LCASH firms in the US, even though HCASH firms tend to distribute much higher CEO compensation compared to LCASH firms, as discussed in the previous section. This reveals that CEO compensation does not act as an incentive for CEOs managing US firms. This finding is also consistent with the findings of UK HCASH firms, presented in table 6, which reveals that CEO compensation is not such an effective strategy in the presence of higher cash levels.

Second, none of the corporate governance mechanisms mentioned earlier is found to have an association with EM, so neither the audit quality, nor the institutional ownership, nor the concentrated ownership is found to impact EM levels in the presence of US high cash holding firms. These findings reject the second, third, and fourth hypotheses suggesting a relationship between each of the three factors and EM. These findings are consistent with the findings of LCASH firms of the US, even though HCASH firms are revealed to spend higher average audit fees and are found to be dominated by a higher percentage of institutional and non-institutional block-holders, compared to LCASH firms. These findings reveal that these mechanisms are not sufficient to restrain EM practices of US firms holding either high or low levels of cash. These findings are also consistent with the findings of UK HCASH firms, presented in table 6, which reveals these mechanisms to be ineffective in reducing EM, in firms holding higher cash levels.

In relation to the moderation effects, the moderating role of CEO compensation appears to be ineffective in reducing managerial opportunism in HCASH firms, as indicated in table 7, as the three joint effects appear to have insignificant relationships with EM. This may be due to the insignificant

association between each of these factors in relation to EM. These findings reject the fifth, sixth, and seventh hypotheses, since analysing their strengths becomes no longer valid. These findings are consistent with the findings of the moderation effects of the LCASH firms within the US context, which reveals the CEO compensation cannot act as a moderator, neither in LCASH firms nor in HCASH firms, towards restraining EM practices and presenting more reliable financial reports in the US market. These findings are also consistent with the findings of UK HCASH firms which reveal that the moderation effects are ineffective in restraining EM within firms holding higher levels of cash, in either one of the two markets.

In summary, the findings of HCASH firms are not much different from those of LCASH firms within the US context, as they both observe corporate governance mechanisms to be ineffective in restraining EM practices. In addition, the moderation effects are also found not to add value in restraining managerial opportunism in HCASH firms, as in LCASH firms. Moreover, both types of firms are found to display negative associations between each of the firm's loss, and growth, with EM, while HCASH firms tend to experience negative association between the firm's size and EM. Hence, US investors are advised to invest in large firms and low growth firms as they are better monitored, and to avoid loss-making firms, in the presence of HCASH. Nevertheless, these findings of US HCASH firms are not much different from those of UK HCASH firms, as they both find it difficult to restrain EM practices using the proposed factors.

11. Comparison between LCASH firms of the UK and the US

To compare the findings of LCASH firms between both contexts of the UK and the US to reveal the marginal impact of the EM constraints employed in each, including the moderation effect of CEO compensation, a test of difference is implemented. First, a t-test is implemented, as revealed in table 8, which indicates a significant difference between the levels of DAC of LCASH firms of the two countries. Hence, the difference in the influence of

the EM constraints is worth analysing between LCASH firms of both countries. Then, a dummy variable is created to indicate the country type "C" (Wright et al., 2006). Table 9 reveals the marginal impact of EM constraints between LCASH firms of the US compared to those of the UK (Gujarati, 2011). The sum of B8 through B15 is -0.810[2] and significant, as indicated by the significance level of 0.00, presented in table 9. This indicates that UK LCASH firms have lower levels of DAC compared to those of the US, due to the higher effectiveness of the EM constraints employed. Hence, this finding rejects the eighth hypothesis suggesting that EM constraints applied in US LCASH firms are more effective in restraining EM practices than those applied in UK LCASH firms. As further analysis, the marginal impact of each individual constraint is analysed independently, as revealed in table 10. Table 10 indicates that the audit quality has a greater impact on EM of UK LCASH firms, compared to those of the US.

12. Comparison between HCASH firms of the UK and the US

To compare the impacts of the EM constraints employed in HCASH firms of both countries of the UK and the US, including the moderation effect of CEO compensation, a test of difference is implemented. First, a t-test is implemented, as indicated in table 11, which reveals an insignificant difference between the levels of DACs of HCASH firms of both countries, as indicated by the 0.787 significance level. Hence, it seems that there is no need for further analysis of the marginal impact of the EM constraints, yet to further confirm this, a dummy variable is created to indicate the country type "C", as previously explained (Wright et al., 2006). Table 12 reveals that there is no significant difference between the impacts of EM constraints in restraining EM practices of HCASH firms of both markets. The sum of B8

[2] $\beta0+\beta1+\beta2+\ldots+\beta14+\beta15= 0.029$ which represents the impact of EM constraints in US firms. $\beta0+\beta1+\ldots+\beta6+\beta7= 0.839$ which represents the impact of EM constraints in UK firms. Hence, the difference between them $\beta8+\beta9+\ldots+\beta14+\beta15= -0.810$ represents the marginal impact of the EM constraints on EM between LCASH firms of the UK and US.

through B15 is 0.153[3], but insignificant, as indicated by the significance level of 0.3685, presented in table 12. This finding rejects the eighth hypothesis suggesting that EM constraints applied in US HCASH firms are more effective in restraining EM practices than those applied in UK HCASH firms, since the result is insignificant. To further confirm this finding, table 13 indicates that there is an insignificant marginal impact of each individual constraint when analysed independently, between HCASH firms of both countries.

13. Conclusion

In conclusion, in the presence of low cash holding levels within UK firms, the corporate governance mechanisms appear to be more effective in restraining EM practices, as suggested. In addition, the moderation effect of CEO compensation appears to be effective in the presence of ownership concentration, which contributes towards reducing managerial opportunism as well. Hence, the presence of low cash levels within UK firms is revealed to add value in making the mechanisms more effective towards restraining EM levels. In UK HCASH firms, however, none of these governance mechanisms is found to be effective in restraining EM practices.

Meanwhile, in the US context, the presence of low cash levels within firms reveals neither the corporate governance mechanisms nor the moderation effects to be valid for reducing managerial opportunism. In comparison with LCASH firms within the US, HCASH firms tend to act similarly in wiping the effectiveness of either one of the factors in reducing the participation of EM, which indicates that the moderating role of CEO compensation is not such an effective strategy in reducing managerial opportunism in the US market, regardless of the cash levels available.

[3] $\beta0+\beta1+\beta2+\ldots+\beta14+\beta15= 0.374$ which represents the impact of EM constraints in US firms. $\beta0+\beta1+\ldots+\beta6+\beta7= 0.221$ which represents the impact of EM constraints in UK firms. Hence, the difference between them $\beta8+\beta9+\ldots+\beta14+\beta15= 0.153$ which represents the marginal impact of the EM constraints on EM between HCASH firms of the UK and US. The marginal impact is insignificant, as observed from table 12 below.

From the above analysis, firms intending to reduce the participation of EM in the UK are advised to incorporate the following mechanisms. In the case of firms holding low levels of cash, they are advised to consider the distribution of higher levels of CEO compensation. LCASH firms must increase their spending on acquiring higher audit efforts. They must reduce ownership concentration, or distribute high CEO compensation in the presence of high ownership concentration. LCASH firms are advised to reduce the level of compensation in the presence of lower spending on audit services. Meanwhile, none of the above mechanisms prove to be effective for firms intending to reduce EM practices in the US market. Applying these strategies will help reduce EM practices in the UK market, leading to higher reliability of the firms' reported earnings and lower conflicts of interests between managers and their shareholders. As for the UK investors, they are advised to invest in such firms following these instructions, and in large firms, as they become highly monitored, when low cash holding levels are present, to encourage the issuance of more reliable financial reports.

One of the limitations of this research is analysing the impact of the managerial ownership, due to the absence of a clear definition to indicate the percentage of shareholdings held by managers. This addition would have added higher value to the research, especially for analysing its joint effect with the CEO compensation, as the two are directly related to managers. Moreover, a large amount of data related to the components of CEO compensation, whether short-term or long-term is unavailable, which makes incorporating the two components into the analysis difficult, even though it would have provided a clearer picture of which component encourages the participation of EM and which better restrains EM. Making this classification would have reduced the number of observations available for analysis, leading to biased conclusions or providing a statistically insignificant outcome. Therefore, analyzing the impact of the short-term, as well as the long-term components of CEO compensation, on EM was not possible to accomplish.

The findings of this research opens new areas for research such as the mediation effect of cash holdings on the participation of EM, since the

presence of cash holdings is found to significantly impact firms and managers' opportunistic behaviours. Additionally, performing a comparative analysis between a developed country and a developing country might also add value to distinguish which factors are more effective in restraining managerial opportunism and EM practices within the two different markets.

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Appendix

Table 1: Research Variables

Variables	Labels	Measurements/ Description	Expected Sign	Data Source
Dependent Variable: Earnings Management (EM) – *Absolute value of discretionary accruals measured using the modified Jones (1991) model*				
Net Income	NI_{it}	*is the net income of firm i in year t.*		Bloomberg
Cash Flow from Operations	CFO_{it}	*is the net cash flows from operations of firm i in year t.*		Bloomberg
Lagged Total Assets	TA_{it-1}	*is the total assets for firm i in year t–1.*		Bloomberg
Change in Revenues	ΔREV_{it}	*is the change in revenues of firm i between years t and t–1.*		Bloomberg
Change in Receivables	ΔREC_{it}	*is the change in receivables of firm i between years t and t–1.*		Bloomberg
Property Plant and Equipment	PPE_{it}	*is the level of gross property, plant, and equipment of firm i in year t.*		Bloomberg
Moderating Variable				
CEO Compensation	COMP	*Log of T.Compensation*	Un-known	Bloomberg
Independent Variables				
Audit Quality	AUDQ	*Log of Audit Fees*	Un-known	Datastream ECSLDP064
Institutional Ownership	INSTOWN	*T. percentage of shares of at least 5% , held by investment banks, institutions, pension funds and endowment funds*	Un-known	Datastream (NOSHIC+ NOSHPF)
Concentrated Ownership	CONOWN	*T. percentage of strategic shareholdings of at least 5% – INSTOWN*	Un-known	Datastream (NOSHST–INSTOWN)
Cash Holdings	CASH	$\frac{Cash\ and\ Cash\ Equivalents}{T.Assets}$	(+)	Bloomberg
Control Variables				
Firm Leverage	LEV	$\frac{T.Debt}{T.Assets}$	Un-known	Bloomberg
Firm Size	SIZE	*Log. of Total Assets*	Un-known	Bloomberg
Firm Profitability	ROA	$\frac{NI}{T.Assets}$	Un-known	Bloomberg

Variables	Labels	Measurements/ Description	Expected Sign	Data Source
Firm Growth	MTB	*Market-to-Book Ratio*	Un-known	Bloomberg
Cash Flows	CFO	$\frac{CFO}{T.Assets}$	Un-known	Bloomberg
Firm's Loss	LOSS	*Dummy Variable taking a value of 1 if the firm's net income is negative and 0 otherwise.*	(+)	Bloomberg

Table 2: Descriptive Statistics of UK LCASH Firms

VARIABLE	MEAN	STD. DEV.	MIN	MAX
CASH	0.034	0.016	0.001	0.063
DAC	0.020	0.019	0	0.108
COMP	2.9 M	2.3 M	3,342.36	12.3 M
AUDQ	2.7 M	4.5 M	0	34 M
INSTOWN	0.091	0.083	0	0.39
CONOWN	0.070	0.145	0	0.61
LEV	23.76	13.93	0	57.47
SIZE	9.58	0.592	8.43	11
CFO	0.096	0.055	-0.054	0.266
LOSS	0.10	0.30	0	1
ROA	5.83	5.46	-12.52	25.68
MTB	3.25	4.97	0.07	56.2

***Where**: COMP represents CEO compensation; AUDQ is the audit quality; INSTOWN is the institutional ownership; CONOWN is the concentrated ownership; CASH is the firm's cash holdings; LEV is the firm's leverage; SIZE is the firm's size; ROA represents the firm's profitability; MTB represents the firm's growth; CFO represents the firm's cash flow; LOSS represents the firm's loss.*

Table 3: Descriptive Statistics of UK HCASH Firms

VARIABLE	MEAN	STD. DEV.	MIN	MAX
CASH	0.143	0.78	0.063	0.411
DAC	0.038	0.044	0	0.326
COMP	3.2M	2.78M	627,933	17M
AUDQ	2.8M	5.2M	48,242	36.9M
INSTOWN	0.01	0.1	0	0.46
CONOWN	0.072	0.162	0	0.69
LEV	19.18	17.19	0	80.08
SIZE	9.34	0.578	8.25	11
CFO	0.134	0.097	-0.057	0.42
LOSS	0.081	0.274	0	1
ROA	8.98	9.7	-56.98	36.24
MTB	5	4.45	0.32	26.14

***Where**: COMP represents CEO compensation; AUDQ is the audit quality; INSTOWN is the institutional ownership; CONOWN is the concentrated ownership; CASH is the firm's cash holdings; LEV is the firm's leverage; SIZE is the firm's size; ROA represents the firm's profitability; MTB represents the firm's growth; CFO represents the firm's cash flow; LOSS represents the firm's loss.*

Table 4: Descriptive Statistics of US LCASH Firms

VARIABLE	MEAN	STD. DEV.	MIN	MAX
CASH	.030	.020	0	.070
DAC	.028	.032	5.79e-06	.330
COMP	13.6 M	12.5 M	33,831	156 M
AUDQ	12.7 M	131 M	328,000	3.4 B
INSTOWN	0.093	0.088	0	0.65

VARIABLE	MEAN	STD. DEV.	MIN	MAX
CONOWN	0.024	0.077	0	0.55
LEV	29.80	13.72	0	103.05
SIZE	10.25	0.488	9.03	11.9
CFO	0.108	0.054	-0.086	0.339
LOSS	0.060	0.237	0	1
ROA	5.87	5.86	-50.58	28.54
MTB	3.42	28.2	-638.7	759.6

***Where**: COMP represents CEO compensation; AUDQ is the audit quality; INSTOWN is the institutional ownership; CONOWN is the concentrated ownership; CASH is the firm's cash holdings; LEV is the firm's leverage; SIZE is the firm's size; ROA represents the firm's profitability; MTB represents the firm's growth; CFO represents the firm's cash flow; LOSS represents the firm's loss.*

Table 5: Descriptive Statistics of US HCASH Firms

VARIABLE	MEAN	STD. DEV.	MIN	MAX
CASH	.157	.083	0.07	.708
DAC	.039	.044	1.04e-17	.446
COMP	14.1 M	16.2 M	245,322	378 M
AUDQ	13.2 M	134 M	490,760	3.5 B
INSTOWN	0.11	0.096	0	0.78
CONOWN	0.032	0.092	0	0.81
LEV	20.37	16.45	0	110.6
SIZE	10.02	0.532	8.78	11.9
CFO	0.136	0.074	-0.420	0.478
LOSS	0.068	0.252	0	1
ROA	8.99	8.87	-58.14	58.49
MTB	5.02	55.53	-1106.9	1372.9

***Where**: COMP represents CEO compensation; AUDQ is the audit quality; INSTOWN is the institutional ownership; CONOWN is the concentrated ownership; CASH is the firm's cash holdings; LEV is the*

firm's leverage; SIZE is the firm's size; ROA represents the firm's profitability; MTB represents the firm's growth; CFO represents the firm's cash flow; LOSS represents the firm's loss.

Table 6: Low vs. High Cash Holding UK Firms Analysis

Dependent Variable: DAC measured using the Modified Jones Model		
Variables	**UK LCASH Firms**	**UK HCASH Firms**
	Coef.	**Coef.**
COMP	-0.179*	-0.187
AUDQ	-0.205*	-0.153
INSTOWN	0.315	-0.778
CONOWN	0.571*	0.246
COMP x AUDQ	0.033*	0.032
COMP x INSTOWN	-0.057	0.125
COMP x CONOWN	-0.090*	-0.023
LEV	-0.0001	0.001
SIZE	-0.038*	-0.07
CFO	-0.028	0.162
LOSS	0.006	0.001
ROA	-0.0004	-0.003*
MTB	-0.001*	0.00004

**** and ** denote statistical significance at the level of 5% and 10%, respectively.***

***Where**: COMP represents CEO compensation; AUDQ is the audit quality; INSTOWN is the institutional ownership; CONOWN is the concentrated ownership; LEV is the firm's leverage; SIZE is the firm's size; ROA represents the firm's profitability; MTB represents the firm's growth; CFO represents the firm's cash flow; LOSS represents the firm's loss.*

Table 7: US Low vs. High Cash Holding Firms Analysis

Dependent Variable: DAC measured using the Modified Jones Model		
Variables	**US LCASH Firms**	**US HCASH Firms**
	Coef.	**Coef.**
COMP	-0.033	0.020
AUDQ	-0.032	0.039
INSTOWN	-0.501	0.498
CONOWN	0.269	-0.192
COMP x AUDQ	0.004	-0.003
COMP x INSTOWN	0.069	-0.069
COMP x CONOWN	-0.045	0.019
LEV	0.0002	-0.0003
SIZE	0.004	-0.031*
CFO	0.169*	-0.038
LOSS	0.015*	0.043*
ROA	-0.003*	0.00002
MTB	0.00003**	0.00003**

**** and ** denote statistical significance at the level of 5% and 10%, respectively.***

***Where**: COMP represents CEO compensation; AUDQ is the audit quality; INSTOWN is the institutional ownership; CONOWN is the concentrated ownership; LEV is the firm's leverage; SIZE is the firm's size; ROA represents the firm's profitability; MTB represents the firm's growth; CFO represents the firm's cash flow; LOSS represents the firm's loss.*

Table 8: Test of Difference in Means of DAC of UK and US LCASH Firms

Observations		*Mean*
UK Firms	211	0.020
US Firms	1373	0.028
Test of Difference	(Pr = 0.0005*)	-0.008

Table 9: Regression Results of Combined Sample of UK and US LCASH Firms

Model: ***EM= β0+ β1 COMP+ β2 AUDQ + β3 INSTOWN + β4 CONOWN+ β5 (COMP x AUDQ) + β6 (COMP x INSTOWN) + β7 (COMP x CONOWN)+ β8 C+ β9 (C x COMP) + β10 (C x AUDQ) + β11 (C x INSTOWN) + β12 (C x CONOWN) + β13 (C x COMP x AUDQ) + β14 (C x COMP x INSTOWN) + β15 (C x COMP x CONOWN) + β16 LEV +β17 SIZE + β18 ROA+ β19 MTB+ β20 CFO + β21 LOSS+ ε***

Variables	Parameter	Coeff.	Std. Err	t	P> t
INTERCEPT	β0	0.846	0.630	1.34	0.180
COMP	β1	-0.112	.093	-1.21	0.227
AUDQ	β2	-0.159	.102	-1.55	0.121
INSTOWN	β3	-0.226	.499	-0.45	0.651
CONOWN	β4	0.525	.282	1.86	0.063**
COMP x AUDQ	β5	0.023	.015	1.49	0.138
COMP x INSTOWN	β6	0.026	.078	0.33	0.740
COMP x CONOWN	β7	-0.084	.040	-2.08	0.038*
C	β8	-0.597	.835	-0.72	0.475
C x COMP	β9	0.084	.120	0.70	0.483
C x AUDQ	β10	0.133	.130	1.02	0.307
C x INSTOWN	β11	-0.240	.630	-0.38	0.703
C x CONOWN	β12	-0.246	.430	-0.57	0.568
C x COMP x AUDQ	β13	-0.020	.019	-1.04	0.298
C x COMP x INSTOWN	β14	0.038	.096	0.40	0.690
C x COMP x CONOWN	β15	0.038	.062	0.61	0.542
LEV	β16	0.0001	.0002	0.62	0.535
SIZE	β17	0.002	.010	0.18	0.859
CFO	β18	0.143	.049	2.94	0.003*
LOSS	β19	0.009	.007	1.40	0.161

ROA	β20	-0.003	.001	-4.52	0.000*
MTB	β21	0.00004	.00002	1.88	0.060**
Prob>F= 0.0000			R-squared= 0.5102		
F-value= 3.84			Adjusted R2= 0.3772		

Test of β0+β1+…+β6+β7=0 (F-value = 3.05, Prob > F =0.0035*)

Test of β0+β1+…+β14+β15=0 (F-value = 2.21, Prob > F =0.0048*)

Test of H8: β8+β9+…+β14+β15=0 (F-value= 2.35, Prob > F =0.0165*)

Variable Definitions:

"C" indicates the Country Type= "1" for US and "0" for UK

Controlling for the firm's leverage, size, CFO, loss, ROA, and MTB, the coefficients can be interpreted as follows:

β0+β1+…+β6+β7= represent the impact of EM constraints in UK firms.

β0+β1+β2+…+β14+β15= represent the impact of EM constraints in US firms.

β8+β9+…+β14+β15: represent the marginal impact of the EM constraints on EM between LCASH firms of the UK and the US to test for [H8]→ EM constraints are more effective in the US, compared to the UK, in reducing EM practices.

**** and ** denote statistical significance at the level of 5% and 10%, respectively.***

Table 10: Marginal Impact of Each Variable Independently in LCASH

Variables	Parameter	Coeff.	F-value	P> t
COMP	β8+β9	-0.513	0.26	0.771
AUDQ	β8+β10	-0.464	4.23	0.015*
INSTOWN	β8+β11	-0.837	0.37	0.692
CONOWN	β8+β12	-0.843	0.31	0.737
COMP x AUDQ	β8+β13	-0.617	2.15	0.117
COMP x INSTOWN	β8+β14	-0.559	0.37	0.690
COMP x CONOWN	β8+β15	-0.559	0.33	0.721

***Where**: COMP represents CEO compensation; AUDQ is the audit quality; INSTOWN is the institutional ownership; CONOWN is the concentrated ownership; CASH is the firm's cash holdings; LEV is the firm's leverage; SIZE is the firm's size; ROA represents the firm's profitability; MTB represents the firm's growth; CFO represents the firm's cash flow; LOSS represents the firm's loss.*

Table 11: Test of Difference in Means of DAC of UK and US HCASH Firms

Observations		Mean
UK Firms	185	0.038
US Firms	1365	0.039
Test of Difference	(Pr = 0.787)	-0.001

Table 12: Regression Results of Combined Sample of UK and US HCASH Firms

Model: ***EM= β0+ β1 COMP+ β2 AUDQ + β3 INSTOWN + β4 CONOWN+ β5 (COMP x AUDQ) + β6 (COMP x INSTOWN) + β7 (COMP x CONOWN)+ β8 C+ β9 (C x COMP) + β10 (C x AUDQ) + β11 (C x INSTOWN) + β12 (C x CONOWN) + β13 (C x COMP x AUDQ) + β14 (C x COMP x INSTOWN) + β15 (C x COMP x CONOWN) + β16 LEV +β17 SIZE + β18 ROA+ β19 MTB+ β20 CFO + β21 LOSS+ ε***

Variables	Parameter	Coeff.	Std. Err	t	P> t
INTERCEPT	β0	0.236	1.33	0.18	0.859
COMP	β1	-0.038	.184	-0.21	0.836
AUDQ	β2	0.041	.221	0.19	0.851
INSTOWN	β3	-0.654	.939	-0.70	0.486
CONOWN	β4	0.594	.552	1.08	0.282
COMP x AUDQ	β5	0.003	.031	0.10	0.918
COMP x INSTOWN	β6	0.107	.153	0.70	0.482
COMP x CONOWN	β7	-0.068	.083	-0.82	0.415
C	β8	-0.125	1.545	-0.08	0.935
C x COMP	β9	0.056	.211	0.26	0.792
C x AUDQ	β10	-0.006	.250	-0.02	0.982
C x INSTOWN	β11	1.124	1.019	1.10	0.270
C x CONOWN	β12	-0.808	.630	-1.28	0.200
C x COMP x AUDQ	β13	-0.006	.035	-0.16	0.869
C x COMP x INSTOWN	β14	-0.172	.163	-1.06	0.290
C x COMP x CONOWN	β15	0.090	.093	0.97	0.332
LEV	β16	-0.0002	.0002	-1.00	0.316
SIZE	β17	-0.033	.014	-2.38	0.017*
CFO	β18	-0.011	.068	-0.16	0.870

LOSS	β19	0.037	.011	3.34	0.001*
ROA	β20	–0.0004	.001	–0.45	0.654
MTB	β21	0.00003	.00002	1.93	0.054*
Prob>F= 0.0000		R–squared= 0.3603			
F–value= 2.13		Adjusted R^2= 0.1911			
Test of β0+β1+…+β6+β7=0 (F–value =0.71, Prob > F =0.6676)					
Test of β0+β1+…+β14+β15=0 (F–value =1.09, Prob > F =0.3602)					
Test of H8: β8 + β9 + …+ β15=0 (F–value = 1.09, Prob > F =0.3685)					

Variable Definitions:

"C" indicates the Country Type= "1" for US and "0" for UK

Controlling for the firm's leverage, size, CFO, loss, ROA, and MTB, the coefficients can be interpreted as follows:

β0+β1+…+β6+β7= represent the impact of EM constraints in UK firms.

β0+β1+β2+…+β14+β15= represent the impact of EM constraints in US firms.

β8+β9+…+β14+β15: represent the marginal impact of the EM constraints on EM between HCASH firms of the UK and the US to test for [H8]→ EM constraints are more effective in the US, compared to the UK, in reducing EM practices.

** and ** denote statistical significance at the level of 5% and 10%, respectively.*

Table 13: Marginal Impact of Each Variable Independently in HCASH

Variables	Parameter	Coeff.	F–value	P> t
COMP	β8+β9	–0.069	0.36	0.696
AUDQ	β8+β10	–0.131	0.43	0.650
INSTOWN	β8+β11	0.999	0.61	0.543
CONOWN	β8+β12	–0.933	1.04	0.355
COMP x AUDQ	β8+β13	–0.131	0.08	0.927
COMP x INSTOWN	β8+β14	–0.297	0.56	0.571
COMP x CONOWN	β8+β15	–0.035	0.58	0.560

***Where**: COMP represents CEO compensation; AUDQ is the audit quality; INSTOWN is the institutional ownership; CONOWN is the*

concentrated ownership; CASH is the firm's cash holdings; LEV is the firm's leverage; SIZE is the firm's size; ROA represents the firm's profitability; MTB represents the firm's growth; CFO represents the firm's cash flow; LOSS represents the firm's loss.